Ames Laboratory Environment, Safety, Health, and Assurance (ESH&A)

Fiscal Year 2010 Trend Analysis
2-24-2011

Trend Analysis is performed to determine common occurrences or prevailing events that should be addressed with additional inspections, training, reviews, policies, etc. The following sources of information were reviewed for trend analysis from FY2006 to FY2010:

- Employee Safety and Security Concerns
- Independent Walk-Through Findings
- Program / Department Walk-Through Findings
- Walk-About (Walk-Throughs exterior to buildings) Findings
- Discrepancy Reports
- Injury and Illness Data
- Event Reporting (including potentially reportable events, Topical Appraisals and Issues and DOE / External Reviews)
- Causal Factors

Employee Safety and Security Concerns

As indicated in the following table below, there was a 76% increase in the total number of Employee Safety and Security Concerns from the 4-year average. The Ames Laboratory actively promotes that employee concerns of all types be brought to the attention of ESH&A. The types of concerns recorded in FY2010 include possibility of carpet mold, environmental concerns with method of snow removal, black powder on counter possibly from air duct supply, energy conservation with windows, air pressure difference lifts ceiling tiles resulting is dispersed dust, construction zone signage, abandoned bike at rack, workers observed smoking on Spedding roof, access difficulties with dumpsters, HEPA air scrubber inspection tags, timely notification of Executive Council for emergency situations, access control concerns with new proximity cards, Spedding entrance stair visibility, Wilhelm dock slippery after repairs and newly applied epoxy/sealant, and damage to Zaffarano dumpster (ISU). Although there was an increase in concerns, no specific trends have been identified and no concerns of major programmatic significance were identified.

Employee Safety and Security Concerns							
Category	**FY 2006**	**FY 2007**	**FY 2008**	**FY 2009**	**4-Year Average**	**FY 2010**	**% Change from 4-Year Average**
Administrative	0	0	0	0	0	3	Increase
Chemical Spills	1	0	1	0	.50	0	Decrease
Fire Safety	1	0	0	1	.50	0	Decrease
General Safety	2	3	2	1	2	6	200% Increase
Industrial Hygiene	3	2	0	1	1.50	3	100% Increase
Environmental	5	1	0	0	1.50	2	33% Increase
Security	0	1	1	1	.75	0	Decrease
Radiological	0	0	0	0	0	0	None
Traffic Safety	0	0	0	0	0	0	None
Property Management	0	0	1	0	.25	1	300% Increase
Other (non-safety)	1	0	0	0	.25	0	Decrease
Odors	1	3	1	0	1.25	0	Decrease
Total Concerns	**14**	**10**	**6**	**4**	**8.5**	**15**	**76% Increase**

Independent Walk-Through Findings

Ames Laboratory continues to experience a gradual reduction of findings identified during Independent Walk-Throughs **(13% decrease from the 4-year average),** as indicated in the table below. As in years past, some of the findings most likely would not be cited by OSHA. Often times, the Walk-Through Team will identify concerns as a "best management practices" and such concerns are elevated to a moderate level to ensure it is tracked and closed. The OSHA regulations are intended to be a basic minimum for compliance, and the expectation of Ames Laboratory and the Walk-Through Team exceeds the requirements of OSHA. The Laboratory is striving to be a "Best in Class" facility and issues are identified and corrected to ensure best practices are promoted. No High Hazard Findings have been identified since June 2003.

In addition to the ISU EH&S Representative recently added to the Walk-Through Team, the Purchasing and Property Services Manager is now participating on all walk-throughs. This has proven to be beneficial as different ideas and perspectives are shared. It has also made Ames Laboratory and ISU safety programs better aligned; this is especially beneficial for those who conduct research for both organizations. A member of the Executive Council has participated on 100% of the walk-throughs; this has primarily been Dr. King.

Although there have been increases in some categories of findings by percentage, the actual total number of findings in those specific categories is insignificant (ladder safety). The two notable increases include industrial hygiene, and fire safety when compared to the previous 4 year average. The Industrial Hygiene findings were primarily labeling of secondary containers. Given the many secondary containers and dynamic nature of the work performed with sample containers these are not unexpected. Although there were increases, the severity of the findings was minimal. The fire safety findings include proximity of materials to sprinkler heads, need to evaluate flammable chemicals and combustibles materials for disposal to reduce fire loading, and ceiling tiles missing that could delay sprinkler activation in the event of a fire. Again, the severity and widespread concern throughout the Laboratory is minimal.

The Independent Walk-Through Program has proven to be an effective tool to educate, promote, and measure compliance within the facility.

Independent Walk-Through Findings							
Categories	**FY 2006**	**FY 2007**	**FY 2008**	**FY 2009**	**4-Year Average**	**FY 2010**	**% Change from 4-Year Average**
Admin. Controls	0	1	0	1	.5	0	Decrease
Comp. Gases	8	4	10	10	8	5	38% Decrease
Confined Space Entry	0	0	0	0	0	0	None
Electrical Safety	50	44	64	54	53	45	15% Decrease
Emergency Planning	2	2	3	2	2.25	1	56% Decrease
Environmental	13	21	15	11	15	15	Same
Fire Safety	5	2	8	6	5.25	9	71% Increase
General Safety	46	68	65	46	56.25	29	48% Decrease
Hoisting & Rigging	0	0	0	0	0	0	None
Hazard Communication	2	2	3	2	2.25	1	56% Decrease
Industrial Hygiene	9	13	10	23	16.25	36	122% Increase
Infrastructure	0	0	0	0	0	0	None
Ladder Safety	0	1	0	1	.50	2	300% Increase
Laser Safety	0	0	0	0	0	1	Increase
Life Safety Code	6	4	5	5	5	2	60% Decrease
Lockout/Tagout	0	1	0	0	.25	0	Decrease
Machine Guarding	3	6	2	5	4	1	75% Decrease

Independent Walk-Through Findings							
Categories	**FY 2006**	**FY 2007**	**FY 2008**	**FY 2009**	**4-Year Average**	**FY 2010**	**% Change from 4-Year Average**
Other	1	2	0	0	.75	0	Decrease
PPE	11	3	2	6	5.5	4	27% Decrease
Plumbing	1	1	0	0	.50	0	Decrease
Procedural	0	0	0	1	.25	0	Decrease
Property Management	2	5	4	1	3	3	Same
Radiation	5	1	1	0	1.75	0	Decrease
Respiratory	3	4	5	1	3.25	3	8% Decrease
Training	0	0	0	0	0	0	None
Totals	**167**	**185**	**197**	**175**	**181**	**157**	**13% Decrease**
Noteworthy Practices	0	2	0	0	.50	0	Decrease

Program / Department Walk-Through Findings

The information collected from the programs / departments is requested in percentage (not the total number of findings). Specific comparisons (number of findings), cannot be made to the Independent Walk-Through Concerns, but general observations on the type of concerns identified can be ascertained. The largest category observed was "General Safety" and the second largest category was "Electrical" concerns. This is consistent with the Independent Walk-Through Program. No major concerns are discernable.

Walkabout (Walk-Through exterior to buildings) Findings

Walkabouts (building roofs, yards, sidewalks, exterior doors and windows) have been performed annually since 2005. The most recent Walkabout was performed September 30, 2010. The goal of the Walk-About is to identify potential safety hazards and violations that are not identified during the Independent Walk-Through Program. Hazards such as deviations in concrete for walking and working surfaces, proper operation of Ground Fault Circuit Interrupters, secure handrails on stairs, proper signs are posted for hazards, emergency exits are maintained, etc. No High Hazard Findings have been identified to date. As with the Independent Walk-Throughs, some of the findings would not be cited by OSHA. The findings would be categorized as best management practices. The Walkabout provide a great opportunity to identify other areas of concern such as deteriorating infrastructure such as dried or missing caulking on windows, ground erosion, removal of unplanned bushes and trees, concerns to be monitored for future walkabouts, etc.

Year	Concerns
2006	10
2007	9
2008	7
2009	5
2010	9

Discrepancy Reports

Discrepancy reports are issued by the Plant Protection staff during facility tours. The total discrepancies have decreased 18% from the previous 4-year average. The organization(s) responsible for the discrepancy are notified via Plant Protection / ESH&A Staff for follow-up and correction. A new category of emphasis, "Hood Sash / Set Back", was added the last quarter of FY2007. This accounted for the large increase from FY2007 (64) to FY2008 (232). As a result of the campaign efforts by the Energy Management Steering Committee, the "Hood Sash / Set Back" findings have decreased 58% from FY09 to FY10.

There was an increase in three categories including unsecured gas cylinders, main cylinder valves open, and obstructed hallway or door. Correction of these discrepancies was resolved without concern.

Some of the discrepancies may repeated because a person is out on travel. It should also be noted that increases and decreases in specific categories may be due to changes in the nature of the research in an area (i.e., increase in compressed gas cylinders unsecured) or, changes in the staff in an area (i.e., decrease in coffee pot discrepancies). No trend towards programmatic weaknesses has been discerned.

Discrepancy Reports							
Category	**FY 2006**	**FY 2007**	**FY 2008**	**FY 2009**	**4-Year Average**	**FY 2010**	**% Change from 4-Year Average**
Coffee Pots On & Hot	39	83	72	68	65.5	49	25% Decrease
Soldering Pen/Iron on & hot	7	3	9	10	7.25	6	17% Decrease
Unsecured Gas Cylinder	9	18	19	11	14.25	21	47% Increase
Natural Gas Valve On	10	19	15	9	13.25	8	40% Decrease
Main Cylinder Valve Open	13	14	22	14	15.75	16	2% Increase
Uncapped Cylinder	14	12	25	16	16.75	8	52% Decrease
Unattended Flame	1	4	3	1	2.25	1	56% Decrease
Obstructed Hallway / Door	0	15	3	12	7.5	15	100% Increase
Unsecured Door	87	87	86	96	89	84	6% Decrease
Hood Sash / Set Back *(New Category -2007 Emphasis)*	-	64	232	249	181.6 (3 year average)	105	42% Decrease
Improper / Incompatible Storage	0	8	7	7	5.5	2	63%Decrease
Obvious Equipment Malfunction	0	13	13	19	11.25	7	38% Decrease
Window Open	0	7	5	8	5	6	20% Increase
Miscellaneous	45	54	57	46	50.5	32	37% Decrease
Total Discrepancies	**225**	**401**	**568**	**567**	**440.25**	**360**	**18% Decrease**

Injury and Illness Data

There was a 39% decrease of total injuries / illnesses and a 43% decrease of OSHA Recordable injuries and illnesses (those requiring medical attention beyond first aid). There was one OSHA Recordable injury, no Lost Work Days (LWDs) events and one Restricted Work Days (RWDs) event. The OSHA Recordable and restricted work day event resulted when an employee received a neck strain when avoiding being trapped from the Dropped UPS Unit (ORPS) at the Wilhelm Dock. The employee was on restricted work duty for seven days.

The Laboratory continues to stress safety/accident prevention in General Employee Training, line management responsibility for safety, distribution of lessons learned, the circulation of Safety Guides, the use of personal protective equipment, safety training, and accident investigations. In addition, the Laboratory Director continues to send Laboratory-wide safety messages stressing the importance of safety and the expectation for all employees to maintain a safe and healthful workplace.

Because the total number of injuries is low, it is difficult to discern trends. The Laboratory will continue to stress the importance of line management responsibilities for safety, identification and correction of hazards, the use of personal protective equipment and safety training in an effort to further reduce injuries in the workplace.

Injury and Illness Data							
Type of Injury / Illness	**FY 2006**	**FY 2007**	**FY 2008**	**FY 2009**	**4-Year Average**	**FY 2010**	**% Change from 4-Year Average**
Contusion / Abrasions	4	2	0	1	1.75	1	43% Decrease
Burn	2	0	0	0	.5	1	100% Increase
Eye Injury	0	0	0	1	.25	0	Decrease
Fracture	1 (1)	0	0	1 (1)	.5	0	Decrease
Laceration	0	6 (2)	2	4 (2)	3	0	Decrease
Puncture	0	1	0	0	.25	0	Decrease
Acute Musculoskeletal Injury	0	2	1 (1)	0	.75	2 (1)	167% Increase
Miscellaneous:							
Otalgia (Pain in the ear)	1	0	0	0	.25	0	Decrease
Respiratory Irritant	0	1	0	0	.25	0	Decrease
Twisted Ankle	0	0	1	0	.25	0	Decrease
Avulsion (toenail)	0	0	0	1	.25	0	Decrease
Bee Sting	0	0	0	1	.25	0	Decrease
Splinter	0	0	0	0	0	1	Increase
Total	**8**	**12**	**4**	**9**	**8.25**	**5**	**39% Decrease**
OSHA Recordable	1	2	1	3	1.75	1	43% Decrease
Non-OSHA Recordable	7	10	3	6	6.5	4	38% Decrease
Lost Work Days –LWD	0	0	2	2	1	0	Decrease
Restricted Work Days – RWD	0	0	18	0	4.5	7	55% Increase
Total of LWD and RWD	0	0	20	2	5.5	7	27% Increase
DART Case Rate	0	0	.23	.2	0.1075	.22	104% Increase
Total Recordable Case Rate (TRCR)	.24	0.48	.23	.68	.41	.21	49% Increase

( ) indicates OSHA Recordable Injury DART = Days Away, Restricted, and/or Transferred

Event Categorization (FY)

The Laboratory utilizes information from a broad variety of sources to determine events which are reviewed against external and local reporting criteria. The sources include concerns, injuries and illnesses, assessment results and operational data. Event reporting information is presented in the following three tables: Event Reporting Summary, Reportable Events, and Ames Local Events. The following are the events categorized in FY 2010:

Categorization Number	Date	Title	Conclusion
E09-062	10-7-09	Nuclear Facility Hazard Categorization	Ames Local-PAA
E09-063	**10-07-09**	**Electrical Shock; 272 DEV**	**ORPS Report SC—AMSO-AMES-AMES-2009-0003**
E09-064	11-01-09	Intentional Flooding ZAF	Not Reportable
E09-065	10-31-09	Dust Causes Fire Alarm, PAC	Ames Local-ORPS
E09-066	11-5-09	Type 1 Low Compromise	Ames Local-ISC
E09-067	11-11-09	Intruders through ISU Steam Tunnels	Ames Local-ISC
E09-068	11-12-09	Type 1 Low System Compromise	Ames Local-ISC
E09-069	11-19-09	Laboratory Notebooks Management Internal Review 9-24-09 (Internal Audit)	Ames Local - ORPS
E09-070	11-19-09	Hoisting and Rigging and Fork Truck	Ames Local-ORPS

Categorization Number	Date	Title	Conclusion
E09-071	**12-1-09**	**Fire of UPS in 335 A HWH**	**ORPS Report SC—AMSO-AMES-AMES-2009-0004**
E09-072	12-1-09	Back Strain – Not Ames Lab Injury	Ames Local-ORPS
E09-073	9-16-09	Maintenance Review	Not Reportable
E09-074	12-8-09	Water Leak – A011 Zaffarano	Ames Local –ORPS
E09-075	12-7-09	Historical Rad Samples Consigned to Waste	Ames Local – NTS (PAAA)
E09-076	12-17-09	Supplemental Air Handler Disabled	Ames Local-ORPS
E09-077	12-28-09	Type 1 Low System Compromise	Ames Local-ISC
E09-078	12-31-09	Vacuum Pump Run to Failure	Ames Local-ORPS
E09-079	01-27-10	Nanoscale Materials Topical Appraisal	Not Reportable
E10-001	01-14-10	Water Leak, A02 ZAF 1-14-10	Ames Local-ORPS
E10-002	01-27-10	HF Alarm	Not Reportable
E10-003	01-29-10	Type 1 Low System Compromise	Ames Local-ISC
E10-004	02-03-10	Type 1 Low System Compromise	Ames Local-ISC
E10-005	02-12-10	Type 1 Low System Compromise	Ames Local-ISC
E10-006	02-16-10	Smoke- Chromium Residue	Ames Local-ORPS
E10-007	02-15-09	Minor Contusion	Ames Local-CAIRS
E10-008	02-23-10	Minor Chemical Burn	Ames Local-CAIRS
E10-009	03-06-10	Electrical Shutdown in HWH	Ames Local-ORPS
E10-010	03-10-10	Type 1 Moderate Cyber Issue	Ames Local- ISC
E10-011	03-10-10	Minor Thermal Burn	Ames Local-CAIRS
E10-012	03-24-10	Minor Laceration	Ames Local-CAIRS
E10-013	03-18-10	Type 1 Low System Compromise	Ames Local-ISC
E10-014	03-22-10	Type 1 Low System Compromise	Ames Local-ISC
E10-015	03-23-10	Type 1 Low System Compromise	Ames Local-ISC
E10-016	03-26-10	Type 1 Low System Compromise	Ames Local-ISC
E10-017	03-31-10	Type 1 Low System Compromise	Ames Local-ISC
E10-018	04-06-10	Type 1 Low System Compromise	Ames Local-ISC
E10-019	04-07-10	Type 1 Low System Compromise	Ames Local-ISC
E10-020	4-13-10	Type 1 Low System Compromise	Ames Local-ISC
E10-021	4-13-09	Type 1 Low System Compromise	Ames Local-ISC
E10-022	4-13-10	Splinter in Thumb	Ames Local-CAIRS
E10-023	4-15-10	Scheduled Power Outage Issue	Ames Local-ORPS
E10-024	4-16-10	Type 1 Low System Compromise	Ames Local-ISC
E10-025	5-11-10	Smoke from Elevator Oil Heater in HWH	Ames Local-ORPS
E10-026	4-28-10	Type 1 Low System Compromise	Ames Local-ISC
E10-027	6-3-10	Employee Ill after Blood Donation	Not Reportable
E10-028	**6-8-10**	**Dropped UPS at Wilhelm Dock**	**ORPS and CAIRS SC—AMSO-AMES-AMES-2010-0001**
E10-029	6-9-10	HF Scrubber Malfunction	Ames Local-ORPS
E10-030	6-11-10	Rad, Contamination Discovery	See Categorization Below
E10-030 Rev 1	**6-18-10**	**Rad and Beryllium Rewrite Contamination Discovery 6-18-10**	**ORPS Report SC-AMSO-AMES-AMES-2010-0002**
E10-031	6-14-10	Zaff Power Outage and Water Leak	Ames Local-ORPS

Categorization Number	Date	Title	Conclusion
E10-032	4-28-10	Type 1 Low System Compromise	Ames Local-ISC
E10-033	6-27-10	Water Detection, ZAF	Not Reportable
E10-034	7-01-10	Researcher Locked in HWH Office	Ames Local-ORPS
E10-035	7-16-10	Laser Safety Review and Radiation Protection Review By DOE 7/12-15/10	Ames Local-NTS Laser = 5 Findings Rad = 4 Findings
E10-036	7-19-10	HEPA Unit Inspection Tags	Ames Local-NTS
E10-037	7-19-10	Fire in HEPA Air Scrubber	Ames Local-NTS
E10-038	8-04-10	Bulk Solvent mix-up	Ames Local- ORPS
E10-039	8-11-10	Flood, Water Loss	Ames Local-ORPS
E10-040	8-17-10	Floor tile burnt- B11 SPH	Ames Local-ORPS
E10-041	8-17-10	Water service leak- CWH-PAC	Ames Local-ORPS
E10-042	8-17-10	Muffle furnace fire- 180 DEV	Ames Local- ORPS
E10-043	8-31-10	Vacuum Pump Fire	Ames Local-ORPS
E10-044	**8-27-10**	**Contractor Injury**	**CAIRS**
E10-045	8-31-10	Bicep Strain	Ames Local - CAIRS
E10-046	9-3-10	Intrusion	Ames Local-ISC
E10-047	9-28-10	Person trapped in HWH Elevator	Ames Local –ORPS
E10-050	9-28-10	Nanoscale Materials Topical Appraisal	Not Reportable
E10-051	9-28-10	X-ray Safety Program Topical Appraisal	Ames Local - ORPS
E10-052	9-28-10	Radiological Personnel Monitoring Topical Appraisal	Not Reportable
E10-053	9-29-10	Laser Safety –Topical Appraisal	Ames Local – ORPS
E10-054	9-29-10	Waste Management Contingency – Topical Appraisal	Not Reportable
E10-055	9-29-10	Waste Contractor Performance – Topical Appraisal	Not Reportable
E10-056	9-30-10	Vulnerability Scan Management – Topical Appraisal	Ames Local - ISC
E10-057	9-30-10	ISU Employee Injury	Not Reportable
E10-058	9-30-10	Type 1 Low System Compromise, 9-21-10	Ames Local-ISC
E10-059	9-30-10	Type 1 Low System Compromise, 9-22-10	Ames Local-ISC
E10-060	9-30-10	Type 1 Low System Compromise, 9-28-10	Ames Local-ISC
E10-061	9-30-10	Type 1 Low System Compromise, 9-29-10	Ames Local-ISC
E10-062	9-30-10	Type 1 Low System Compromise, 9-29-10	Ames Local-ISC
E10-063	9-30-10	Hot Work –Topical Appraisal	Ames Local – ORPS
E10-064	9-30-10	NFPA 704 Postings – Topical Appraisal	Not Reportable
E10-065	9-30-10	Needs Assessment Process – Topical	Not Reportable
E10-066	9-30-10	Event Categorization Process – Topical	Not Reportable

Event Reporting (FY)

As indicated in the summary tables (below), there were four (4) incidents reported to the Occurrence Reporting Processing System (ORPS) and two (2) incidents reported into the Computerized Accident / Incident Reporting System (CAIRS). One of the reportable events was categorized as both and ORPS and a CAIRS; this event was the Dropped UPS. It was categorized in ORPS under Management Concern

and because the employee received a strained neck requiring prescription medication and restricted work duty, it was also entered into CAIRS.

Event Reporting Summary (FY)							
Categories	**2006**	**2007**	**2008**	**2009**	**4-Year Average**	**2010**	**% Change from 4-Year Average**
Occurrence Reports (ORPS)	0	2	4	3 (1)	2.25	4 (1)	78% Increase
Noncompliance Tracking System (NTS)	0	0	0	1 (2)	.25	0	Decrease
Incidents of Security Concern (ISC)	1	0	0	0	.25	0	Decrease
Ames Local (AL)	33	24	38	54	37.25	64	72% Increase
Accident and Injury (CAIRS)	1	2	1	3 (1)(2)	1.75	2 (1)	14% Increase
Other (below reporting threshold)	11	13	24	20	17	13	24% Decrease
Total Events Screened	46	41	67	79	58.25	83	42% Increase

(1 = Combination ORPS / CAIRS)
(2 = Combination CAIRS/NTS)

The Reportable Events table below provides specific details on the reportable events since FY2004.

Reportable Events (FY)					
Year	**Type**	**Identification**	**Date**	**Title**	**Description**
FY 2004	ORPS	CH—AMES – Ames-2004-0001	1-29-04	Electrical Contact	Researcher contacts 110 VAC when trying to reduce the clicking noise of an electrical contact / relay within the interlock box.
FY 2005	ORPS	CH—AMES – Ames-2004-0002	12-20-04	Suspect / Counterfeit Bolts	While performing a Readiness Review, suspect / counterfeit bolts (non load bearing) was discovered.
	ORPS	CH—AMES – Ames-2005-0001	2-1-05	Potential High Voltage Exposure	A visiting scientist (not supported by SC Funding) assembled a prototype research system before seeking Readiness Review.
	ORPS	CH—AMES – Ames-2005-0002	4-20-05	Flash Hazard Analysis Accuracy Questioned	During the SC Electrical Safety Review, the consultant questioned the accuracy of the analysis.
	ORPS	CH—AMES – Ames-2005-0003	8-10-05	Software Issue Found in Fire Alarm System	A smoke detector in building alarmed at the fire panel and central station but did not activate the alarms.
FY 2006	ISC	ISC – IMI 3(#19) Incident # 51451	2-17-06	System Intrusion	An intruder allegedly from force.coe.neu.edu used a real username/password to access gateway.cmpgroup.ameslab.gov.
FY 2007	ORPS	CH- - Ames-Ames-2007-0001	12-29-06	Smolder /Smoke in Renovation Area	A small crack in the concrete floor between two buildings allowed a spark from plasma-arc cutting to reach expansion joint material.
	ORPS	CH- - Ames-Ames 2007-0002	7-27-07	Electrical Conduit Penetration	Conduit penetrated by screw during roofing operations.
FY 2008	ORPS	SC - - AMSO-AMES-AMES-2007-0003	10-4-07	Switch Failure – Fire Alarm System	During annual fire alarm system test and fire drill, the Wilhelm Hall over-ride switch failed.
	ORPS	SC - - AMSO-AMES-Ames-2008-0001	4-23-08	Suspect /Counterfeit Bolts	After review of a lessons learned, the man-lifts were reviewed with one having suspect/counterfeit bolts.
	ORPS	SC - - AMSO-AMES-Ames-2008-0002	5-16-08	Hydrofluoric Acid SAD Procedure Deviation	A larger cylinder of Hydrofluoric Acid was purchased & installed contrary to the Safety Analysis Document and Standard Operating Procedure.
	ORPS	SC - - AMSO-AMES-Ames-	7-3-08	HVAC Vent Unexpectedly Drops	HVAC Upgrade Project a wall vent was not verified that it was removed before removing supply duct.

Reportable Events (FY)					
Year	**Type**	**Identification**	**Date**	**Title**	**Description**
		2008-0003			
FY 2009	ORPS & CAIRS	SC - - AMSO-AMES-Ames-2008-0004	10-24-08	Elbow Injury (Fracture)	An Engineer while applying pressure on opposing wrenches dislodged a bone in the elbow from a previous non-work related injury.
	ORPS & NTS	SC - - AMSO – AMES – Ames – 2009-0001	5-18-09	Beryllium Contamination Found	As a result of performing wipe sampling in preparation for a fume hood exhaust stack lining project, beryllium was discovered above the DOE Limits
	ORPS	SC- - AMSO-AMES-Ames – 2009-0002	9-25-09	Water Service Impairment (Fire Safety) at Service Buildings (ARRA)	ARRA funds stimulus money was appropriated to remodel a portion of the Campus warehouse to provide needed space for the storage of record. Subcontractor determined that the 4 inch water service was inadequate for the sprinkler system.
FY 2010	ORPS	SC- - AMSO – AMES – Ames-2009-0003	10-7-09	Electric Shock	While assembling components of the biomass auger reactor, the student received an electric shock. Activity in space leased by Ames Lab by non employee.
	ORPS	SC-AMSO-AMES-Ames-2009-0004	12-1-09	Fire of UPS	Fire was detected involving a UPS System for the Scalable Computing Lab.
	ORPS & CAIRS	SC-AMSO-AMES-Ames-2010-0001	6-8-10	Dropped UPS on Dock	Delivering a (UPS) unit, two Facilities employees dropped it on its side. As the unit fell, one employee jumped out of the way resulting in neck strain that required prescription muscle relaxer and restricted work duty.
	ORPS	SC_AMSO-AMES-Ames-2010-0002	6-18-10	Rad and BE Discovery	Elevated radiological readings were discovered in recessed area at the tops of some of the doors.
	CAIRS	C10-0001	8-27-10	ARRA Contractor Injury (hernia)	While lifting a door frame into place, contractor pain in his groin. Determined to be hernia requiring surgery.

Causal Factors

As detailed in the following tables and discussion, TapRoot analysis is performed on reportable events and causal analysis process is performed on Ames Local Events.

TapRoot Analysis

TapRoot is a formal (standardized) method used at Ames Laboratory to investigate and determine causal factors for significant events (those beyond Ames Local Events). It is a method that is used by other DOE facilities. The use of TapRoot at Ames Laboratory began in 2004 for Reportable Events (Occurrences (ORPS), Non Compliance Tracking System (NTS) and Incidents of Security Concern (ISC)). No trends are apparent. Below is a table of the ORPS that received TapRoot analysis.

TapRoot Analysis of Reportable Events		
Event Number	**ORPS Description**	**Causal Analysis**
ORPS – 2004 - 001	Electrical Shock –Group Leader not authorized to remove cover.	A5 – Communication LTA
ORPS – 2004 - 002	Suspect Bolts - Equipment sent from Manufacturer with suspect bolts	A1 – Design / Engineering Problem
ORPS – 2005 - 001	Potential High Voltage Exposure	A3 – Human Performance
ORPS - 2005 - 002	Accuracy of Flash Analysis Questioned	A1 - Design / Equipment Problem
ORPS – 2005 - 003	Fire Alarm Annunciation Failed to Activate	A2 – Equipment / Material Problem

TapRoot Analysis of Reportable Events		
Event Number	**ORPS Description**	**Causal Analysis**
ISC – IMI – 3(#19) #51451	Condensed Matter Physics SSH Incident	A4 – Management Problem
ORPS 2007 - 0001	Smoke – Smoldering Event in Graphics Renovation	A2 – Equipment Problem
ORPS 2007- 0002	Electrical Conduit Penetration at Warehouse	A3 – Human Performance
ORPS 2007 – 0003	Wilhelm Hall Annunciators Did Not Activate During Fire Drill	A2 - Equipment / Material Problem
ORPS 2008 - 0001	Suspect / Counterfeit Parts on Man-lift	A2 – Equipment / Material Problem
ORPS 2008 - 0002	Hydrofluoric Acid Procedure Deviation	A3 – Human Performance
ORPS 2008 - 0003	HVAC Upgrade Project – Wall Vent Fell Onto Desk	A4- Management Problem
ORPS 2008 - 0004 & CAIRS	Elbow Injury (Fracture)	None Deemed Appropriate - Legacy
ORPS 2009 - 0001 and NTS	Beryllium Contamination Found	A7 – Other Problem
ORPS 2009 - 0002	Water Service Impairment (Fire Safety) at Service Buildings	A2 – Equipment / Material Problem
ORPS 2009 - 0003	Electric Shock of non employee in lease space	A4 – Management Problem
ORPS 2009 - 0004	Fire in UPS Unit	A2- Equipment / Material Problem
ORPS 2010 - 0001 and CAIRS	Dropped UPS Unit	A4- Management Problem
ORPS 2010 - 0002	Rad Beryllium Discovery in Tops of Doors	A4 - Management Problem

Causal Analysis

Causal Analysis of Ames Local Events started in May of 2004. An Ames Local Event is one which does not meet the threshold of reportability to DOE, but warrants further investigation and potentially the development of corrective actions. The Laboratory also includes non-recordable injuries and illnesses (Ames Local- CAIRS) as an opportunity to ensure incidents are evaluated and potential corrective actions are documented and tracked. Furthermore Ames Local Events are evaluated for recurrence (trending). Ames Laboratory views the causal analysis (investigation and analysis) program as a proactive opportunity to address concerns and develop corrective actions to prevent minor concerns which could lead to more severe injuries and events.

Below are the results of the causal factors identified from all reportable events for FY2006 through FY2010. The predominant causal factor identified is "A3-Human Performance LTA" from the DOE Guide 231.1-2. This is consistent with the number generated since the beginning of causal analysis in May of 2004. A significant increase is noted in "A2 – Equipment/Material Problem". Many of these are attributed to "End-of-Life" of equipment and materials such as water leaks with pipes, fire with UPS, vacuum pumps overheating, elevator oil heater overheating, etc. Corrective actions were developed to appropriately match the identified causal factors.

In 2008, Ames Laboratory added causal analysis of topical appraisals to provide additional data for further trending. This contributed to the increase in the total number of causal factors noted in FY08, FY09, and FY10.

Causal Factors from Reportable and Ames Local Events (exclude non-reportable events)							
Causal Factor	**FY06**	**FY07**	**FY08**	**FY09**	**4-Year Average**	**FY10**	**% Change from 4-Yr Average**
A1- Design/Engineering Problem	4	1	1	2	2	3	50% Decrease
A2- Equipment/Material Problem	3	5	7	6	5.25	15	186% Increase
A3- Human Performance LTA	17	19	13	30	19.75	14	29% Decrease
A4- Management Problem	9	5	19	11	11	4	64% Decrease
A5- Communications LTA	0	0	2	6	2	4	100% Increase
A6- Training Deficiency	1		2	0	.75	0	Decrease
A7- Other Problem (External Phenomena, Radiation/Hazardous Material Problem)	0	0	0	2	.5	2	300% Increase
Totals	**34**	**30**	**44**	**57**	**41.25**	**42**	**2% Increase**

Reportable and Ames Local events requiring corrective actions are tracked in the Ames Laboratory Corrective Action Tracking System (ALCATS). In June of 2007, Corrective Action Verification was added to ALCATS. At 6 month and 12 month intervals, the closed events are revisited to ensure corrective actions are addressed adequately. Depending on the corrective actions (development of procedures, policies, guides, etc.) Group Leaders / Department Managers and workers are interviewed to determine the results of the implemented corrective actions. Since this process was initiated, there has been one event for which the corrective actions were deemed to be "Partially Effective" at the 6 month verification (E07-014, 2007 Review of Materials Control and Accountability Program). After the responsible parties were notified and addition corrective actions were put into place, the corrective actions were deemed effective at the 12 month verification.